WHAT IS CLAIMED IS:

1. A method for making an opening for electrical contact, the method comprising:

performing a first etch through a first dielectric layer to form a first via and a second dielectric layer;

filling the first via with a BARC material to form a first BARC layer;

performing a second etch on the first BARC layer to form a second BARC layer, the second etch having a first etch rate in a first peripheral region of the second BARC layer and a second etch rate in a first central region of the second BARC layer, the first peripheral region located around a sidewall of the first via, the first central region located around a center of the first via, the first etch rate being larger than the second etch rate, the first peripheral region located higher than the first central region, a first top surface of the second BARC layer having substantially a first convex shape;

performing a third etch through a second dielectric layer to form a trench and a third BARC layer, the trench having a trench bottom surface, the trench bottom surface being substantially free from any spike around a side surface of the third BARC layer, a second top surface of the third BARC layer having substantially a second convex shape;

removing the third BARC layer to form a second via.

2. The method of claim 1 wherein the second etch uses a plasma, the plasma having an electron temperature, the electron temperature being higher than 4 eV.

3. The method of claim 2 wherein the electron temperature is lower than 10 eV.

4. The method of claim 3 wherein the plasma has a gas pressure, the gas pressure being lower than 40 mTorr.

5. The method of claim 4 wherein the second etch includes a dry etch, the dry etch using a plurality of ions, the plurality of ions having a plurality of velocities respectively, the plurality of velocities having a plurality of angels with respect to a direction

vertical to a top surface of the dielectric layer respectively, an average magnitude of the plurality of angles being smaller than 10 degrees.

6. The method of claim 5 wherein the average magnitude of the plurality of angles being smaller than 5 degrees.

7. The method of claim 6 wherein the second etch uses a plasma, the plasma having a plasma density, the plasma density exceeding 5×10^{16} ions/m^3.

8. The method of claim 1 wherein the second etch uses an oxygen gas.

9. The method of claim 1 further comprising filling the trench and the second via with a conductive material.

10. The method of claim 1 wherein the first dielectric layer comprises at least one selected from silicon oxide, FSG, and silicon nitride.

11. A method for making an electrical contact, the method comprising:

performing a first etch through a first protective layer and a first dielectric layer to form a first via, a second protective layer and a second dielectric layer, the first protective layer located on the first dielectric layer;

filling the first via with a BARC material to form a first BARC layer;

performing a second etch on the first BARC layer to form a second BARC layer, the second etch having a first etch rate in a first peripheral region of the second BARC layer and a second etch rate in a first central region of the second BARC layer, the first peripheral region located around a sidewall of the first via, the first central region located around a center of the first via, the first etch rate being larger than the second etch rate, the first peripheral region located higher than the first central region;

performing a third etch through a second protective layer and a second dielectric layer to form a trench and a third BARC layer, the trench having a trench bottom surface, the trench bottom surface being substantially free from any spike around a side surface of the third BARC layer;

removing the third BARC layer to form a second via, a cross-section of the second via being smaller than a cross-section of the trench;

performing a fourth etch through a stop layer to form a third via, the dielectric layer located on the stop layer;

filling the trench and the third via with a conductive material.

12. The method of claim 11 wherein the second etch uses a plasma, the plasma having an electron temperature, the electron temperature being higher than 4 eV.

13. The method of claim 12 wherein the electron temperature is lower than 10 eV.

14. The method of claim 12 wherein the plasma has a gas pressure, the gas pressure being lower than 40 mTorr.

15. The method of claim 11 wherein the second etch includes a dry etch, the dry etch using a plurality of ions, the plurality of ions having a plurality of velocities respectively, the plurality of velocities having a plurality of angels with respect to a direction vertical to a top surface of the dielectric layer respectively, an average magnitude of the plurality of angles being smaller than 10 degrees.

16. The method of claim 15 wherein the average magnitude of the plurality of angles being smaller than 5 degrees.

17. The method of claim 11 wherein the second etch uses a plasma, the plasma having a plasma density, the plasma density exceeding 5×10^{16} ions/m^3.

18. The method of claim 11 wherein the first dielectric layer comprises at least one selected from silicon oxide, FSG, and silicon nitride.

19. The method of claim 11 wherein the conductive material comprises at least one selected from a group consisting of copper, aluminum, tungsten, and polysilicon.

20. The method of claim 11 wherein the protective layer comprises silicon oxynitride and the stop layer comprises silicon nitride.